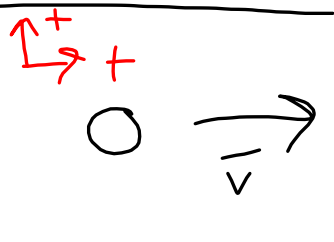


<u>Variable</u>	<u>Units</u>
Work (W)	J [N·m]
Force (F)	N [kg·m/s <sup>2</sup> ]
displacement (d)	m
GPE	J
Mass (m)	kg
a <sub>g</sub>	m/s <sup>2</sup>
height (h)	m
KE	J
velocity (v)	m/s
power (P)	Watts (W) [J/s]

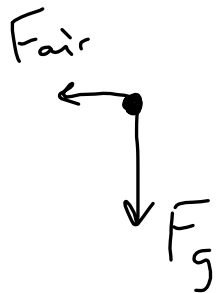
## Energy Calculations and Recap

5)  $m = 2.85 \text{ kg}$   
 $KE = 42 \text{ J}$



A diagram showing a particle represented by a circle. Above the particle, there are two red arrows: one pointing up and one pointing right, both labeled with a red '+' sign. To the right of the particle, there is a black arrow pointing right, labeled with a black  $\vec{v}$ .

FBD



$$KE = \frac{1}{2} m v^2$$

$$v = \sqrt{\frac{2(KE)}{m}}$$

$$= \sqrt{\frac{2(42 \text{ J})}{2.85 \text{ kg}}}$$

$$= 5.43 \text{ m/s}$$

## Energy Conversions:

Hydroelectric power plant

mechanical (GPE)  $\rightarrow$  mechanical (KE)  
[water] [water]  $\rightarrow$

mechanical (KE)  $\rightarrow$  magnetic  $\rightarrow$   
[turbine] [magnets]

electrical  
[electricity]

- Electromagnetic
  - Electric
  - Magnetic
  - Light/Radiant